## Claims

1) A monomer of formula (Im):

$$P-Ar-N-Ar^{1}\left(N-Ar\right)-P$$

$$R$$

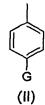
$$(Im)$$

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wherein each Ar is the same or different and independently represents an optionally substituted aryl or heteroaryl; Ar¹ represents an optionally substituted aryl or heteroaryl; each R is the same or different and independently represents a substitutent; each P is the same or different and independently represents a leaving group capable of participating in metal insertion with a nickel or palladium complex catalyst; and n is at least 2.

- 2) A monomer according to claim 1 wherein each P is the same or different and is independently selected from halogen; a reactive boronic group selected from a boronic acid group, a boronic ester group and a borane group; a group of formula -B-Hal<sub>3</sub> M<sup>+</sup> or DZ-B-Hal<sub>3</sub> wherein each Hal independently represents a halogen, M represents a metal cation and DZ represents diazonium; a group of formula wherein each Hal independently represents a halogen and M represents a metal cation a group of formula O-SiR<sup>7</sup><sub>3</sub> wherein each R<sup>7</sup> independently represents an optionally substituted alkyl or aryl; or a moiety of formula -O-SO<sub>2</sub>-Z wherein Z is selected from the group consisting of optionally substituted alkyl and aryl.
  - 3) A monomer according to claim 1 or 2 wherein n is 2 or 3.
- 4) A monomer according to claim 1, 2 or 3 wherein each R is an optionally substituted anyl or heteroaryl.
  - 5) A monomer according to claim 4 wherein each R is a group of formula (II):



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wherein G is hydrogen or a substitutent.

- 6) A monomer according to claim 5 wherein G is a substituent selected from  $C_{1-20}$  alkyl;  $C_{1-20}$  alkoxy;  $C_{1-20}$  fluoroalkyl;  $C_{1-20}$  perfluoroalkyl; and fluorine.
- 7) A process for preparing a polymer comprising the step of polymerising the monomer of formula (Im).

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- 8) A process according to claim 7 wherein each P is independently a halogen or a moiety of formula -O-SO<sub>2</sub>-Z and the monomer of formula (Im) is polymerised in the presence of a nickel complex catalyst.
- 9) A process according to claim 7 wherein each P is independently a halogen or a moiety of formula -O-SO<sub>2</sub>-Z, the monomer of formula (Im) is polymerised with a second monomer having at least two reactive boron functional groups independently selected from a boronic acid group, a boronic ester group and a borane group, and the polymerisation is performed in the presence of a palladium complex catalyst and a base.
  - 10) A process according to claim 7 wherein each P is independently a reactive boron functional group selected from a boronic acid group, a boronic ester group and a borane group; the monomer of formula (Im) is polymerised with a second monomer having at least two substitutents independently selected from halogen or a moiety of formula -O-SO<sub>2</sub>-Z; and the polymerisation is performed in the presence of a palladium complex catalyst and a base.
- 11) A process according to claim 7 wherein one P is a halogen or a moiety of formula -O-SO<sub>2</sub>-Z and the other P is a reactive boron functional group selected from a boronic acid group, a boronic ester group and a borane group, and the polymerisation is performed in the presence of a palladium complex catalyst and a base.
- 25 12) A process according to any one of claims 7-11 wherein the monomer of formula (Im) is polymerised with a second monomer selected from the group consisting of optionally substituted aryl and heteroaryl groups.
- 13) A process according to claim 12 wherein the second monomer is selected from the group consisting of optionally substituted phenyl, fluorene, spirobifluorene, indenofluorene and heteroaryl.
  - 14) A polymer obtainable by the process of any one of claims 7-13.
- 35 15) A co-polymer comprising a first repeat unit of formula (Ir) and a second repeat unit Ar<sup>2</sup>:

$$\begin{array}{c}
-Ar-N-Ar^{1} \left( N-Ar \right) \\
R \left( R \right) \\
n
\end{array}$$
(Ir)

wherein each Ar is the same or different and independently represents an optionally substituted aryl or heteroaryl; Ar<sup>1</sup> represents an optionally substituted aryl or

heteroaryl; each R is the same or different and independently represents a substitutent; n is at least 2; and Ar<sup>2</sup> represents an optionally substituted aryl or heteroaryl that has a backbone consisting of aryl or heteroaryl groups and that is directly linked and conjugated to Ar of the first repeat unit of formula (Ir).

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16) A co-polymer according to claim 15 wherein Ar<sup>2</sup> is selected from the group consisting of optionally substituted phenyl, fluorene, spirobifluorene, indenofluorene and heteroaryl.

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17) An optical device comprising a first electrode for injection of charge carriers of a first type, a second electrode for injection of charge carriers of a second type and a polymer according to claim 14 located between the first and second electrodes.

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18) A method of forming an optical device comprising:

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- depositing from solution a polymer according to claim 14 onto a substrate carrying a first electrode for injection of charge carriers of a first type, and
- depositing over the polymer a second electrode for injection of charge carriers of a second type.

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19) A switching device comprising a polymer according to claim 14.

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- 20) A field effect transistor comprising, in sequence, a gate electrode; an insulator; a polymer according to claim 14; and a drain electrode and a source electrode on the polymer.
- - 21) An integrated circuit comprising a field effect transistor according to claim 20.